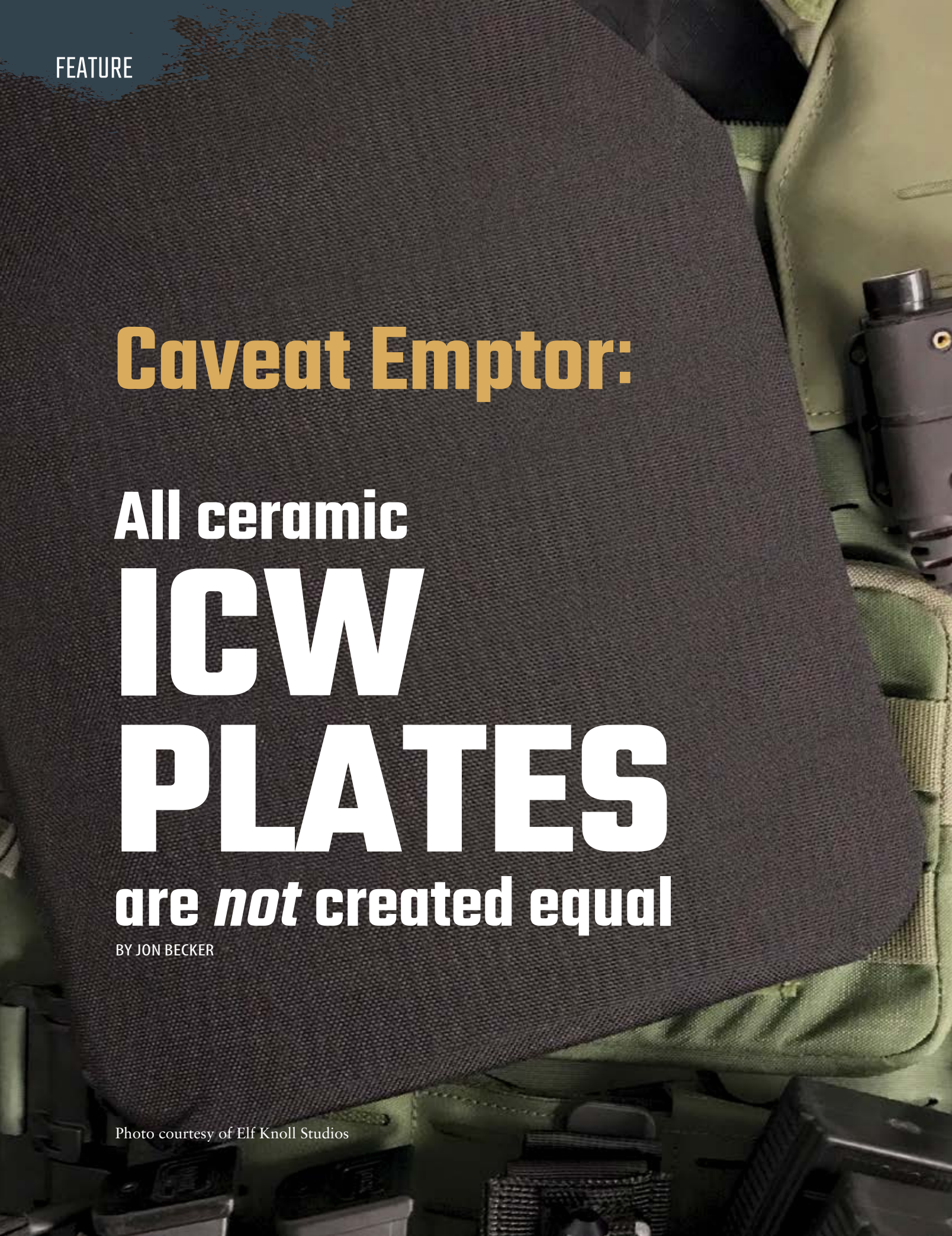
Caveat Emptor:

All ceramic ICW PLATES are *not* created equal

BY JON BECKER



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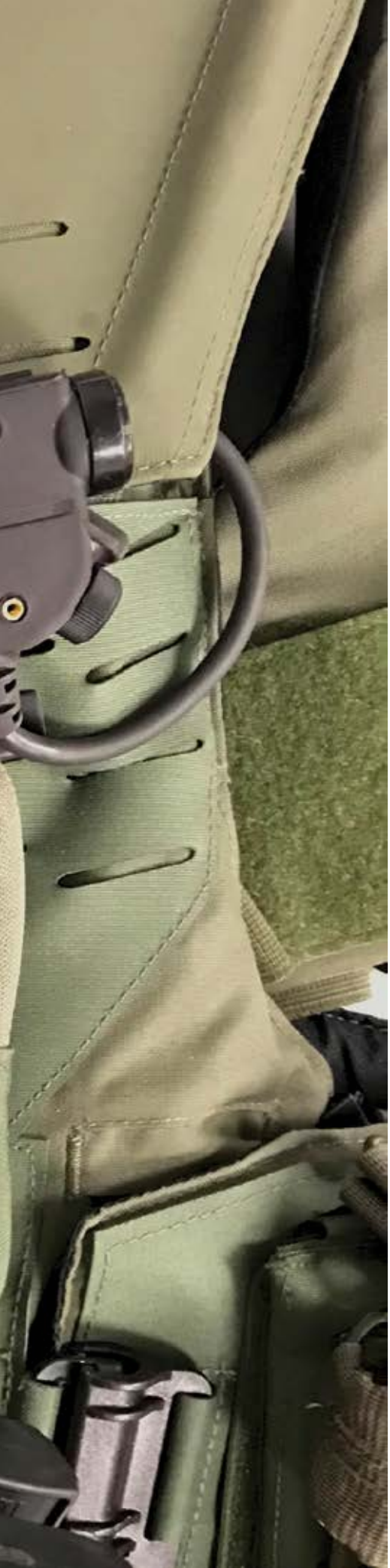

There recently has been a dramatic increase in the use of "in conjunction with" (ICW) ceramic rifle plates in the tactical community. For most teams, the reduced weight, lower cost and reduced thickness of ICW plates make them an attractive choice. When utilized correctly, ICW plates can provide similar protection to stand-alone plates, with dramatically less bulkiness.

Unfortunately, like with any new technology, there are misunderstandings about ICW plates, which has opened the door for uninformed or unprincipled manufacturers and distributors to take advantage of the booming market at the potential expense of officer safety. This article clarifies what the capabilities of ICW plates are, discusses how they work and are tested, and provides basic guidance for the selection and use of ICW plates.

CERAMIC ICW PLATES — A BRIEF HISTORY

Ceramic rifle plates have been around for most of the modern ballistics era. Because of their remarkable strength-to-weight ratio, ceramic plates have been a popular, although somewhat expensive, solution for stopping high threat rifle rounds. Historically, the construction of these plates has been to utilize hard ceramic "tiles" to break up the projectile into small fragments and then use a soft "backer" (often built from the same materials as soft armor) to capture the fragments. Ceramic plates are extremely effective at stopping high threat rounds and are usually much lighter than steel. Traditionally, all the materials used in the plate are combined into a single package, which is then wrapped in Cordura or similar material. Usually referred to as "stand alone," these plates were not dependent upon the vest behind them to be effective and were designed to meet the standards set by the National Institute of Justice (NIJ) Ballistic Resistance of Body Armor Program on their own.

Beginning with the Interceptor vest program in the late 1990s, however, the United States military began to experiment with separating the tile from the backer and using the soft tactical armor as a backer — the theory being that since the plates were always worn with a tactical vest behind them, it was unnecessary to have two sets of soft armor backing the plate (i.e. the vest and the plate backer). Instead, removing the plate backer and utilizing the tactical vest behind it to catch the fragments and spall could reduce the weight and thickness of plates without compromising their effectiveness.

This revolutionary approach of using a plate "in conjunction with" the vest to form a comprehensive armor system, allowed the hard armor plate to break up the bullets while relying on the soft armor to catch projectile fragments and ceramic spall. This research culminated in the Small Arms Protective Insert (SAPI) plate designed to defeat rifle rounds "in conjunction with" the operator's soft tactical armor. In other words, these plates were not designed to be effective when worn without soft armor as a backer. While this meant that SAPI plates were not "stand alone" capable, it also substantially reduced the weight and thickness of the plates and with it the total weight of the armor system.

Although they took almost two decades to become popular in the law enforcement community, ICW plates are now in widespread use. Their reduced weight and thickness as well as lower costs make them a great choice for many tactical units. As a result, there are a wide variety of manufacturers now making ICW plates.

Unfortunately, the historical reliance on standalone plates in the law enforcement community means that most users view plates and soft armor as two separate things. Thus, they believe that they can be purchased separately without regard for one another. While this is true with standalone plates, it is not true with ICW plates. ICW plates and the soft armor they work with must be thought of as a system. Each component contributes to the overall effectiveness of that system. Thus, changing either component will affect the entire system. Put a different way, just because a plate shoots very well with one type of soft armor doesn't mean it will work at all with another. A plate tested with a very robust Level 3A vest might fail catastrophically with another Level 3A vest, not to mention a Level 2. Compounding this is the fact that many of the people selling these plates may have no real understanding of how they work or how they are tested. Thus, they may not be able to offer sound advice on which plates work with which armor.

NIJ HARD ARMOR GUIDELINES

Hard armor plates, like soft armor, are covered by the NIJ's Body Armor Compliance Testing Program. The current NIJ Standard 0101.06 (adopted in July 2008) specifies two categories for hard armor relevant to this discussion: Type III (rifle) and Type IV (armor piercing rifle).[1] Each standard specifies testing criteria that includes new and conditioned testing, drop testing and shooting performance testing with specific ammunition. In Type III, the test round is six hits from the M80 military ball 147 grain 7.62mm. For Type IV, it is a single hit from the 166 grain US military M2 AP .30 caliber.

All certification testing is conducted by independent laboratories to a very strictly defined test protocol. To be found compliant with the .06 standard, each manufacturer must submit specific testing data obtained from an approved independent lab. This test data, along with other specific product information, is then reviewed by NIJ before the product is found to be NIJ compliant and subsequently placed on the Compliant Products List (CPL).

Although an extensive discussion of the NIJ standard and testing is beyond the scope of this article, there are several important things to know about the NIJ standards that have direct consequences to this discussion.

First, and perhaps most surprising, NIJ testing is voluntary. Manufacturers are not required to submit for NIJ certification to sell body armor. In fact, they do not have to submit for any testing. Rather, they could simply state what their product will stop and never actually test it. Although there are programs like the Bulletproof Vest Partnership that require NIJ certification to receive grant funding, it is critical to understand that just because someone is selling "Level III armor" doesn't mean they have tested it, or that it is an NIJ Type III.

Second, it is not in the NIJ's purview to police the marketplace and shut down illegitimate manufacturers. In fact, the agency's enforcement powers are limited to the specific use of its standards and certification stamp. It does not have industry enforcement staff who are out shutting down products and companies that are not safe or do not meet NIJ standards. So, if a manufacturer doesn't claim its product is NIJ compliant, it is not subject to enforcement by NIJ.

Third, it is critical to understand that NIJ testing is intended solely to provide an industry standard against which products can be measured. It is not NIJ's job to test against every possible ammunition, nor is it the agency's responsibility to test every product in the industry. In fact, NIJ does not test products at all. Staff

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review the test results of independent labs to ensure compliance with a standard. As such, NIJ testing is limited solely to the specific ammunition in the standard. It does not include testing against any other rounds and it is not a guarantee that the product is a great product; rather, it simply certifies the performance of the plate against very specific rounds in laboratory conditions.

To some degree, NIJ certification is a bit like a driver's license. While it is true that everyone with a license has met a minimum standard, the fact that you have a license doesn't mean you are a good driver. Moreover, the fact that you are driving doesn't necessarily mean you have a license. Remember, voluntary compliance means not everyone has a license or drives well. NIJ compliance is certainly important; however, with ICW plates you must dig deeper than accepting that a vendor says its product is NIJ compliant.

Fourth, although the NIJ standard discusses certification for in-conjunction designs, there is not a separate standard for ICW plates. ICW plates are not treated differently by the standard nor are they subjected to any special ICW testing. ICW plates are covered by a single paragraph in sections 2.4 and 2.5 that requires that soft armor shot with an ICW plate be NIJ compliant. It also requires that ICW plates be labeled as such and feature a warning that the plate requires the tested soft armor behind it to work. In other words, ICW plates are tested like any other plate; they just have a soft armor package behind them when they are tested. Moreover, each test for ICW armor features just one model of plate and one model of soft armor. Thus, when a plate is NIJ compliant as an ICW plate it has been tested with only one specific soft armor package and the certification does not extend beyond that one soft armor package. NIJ ICW certification does not mean that plate will work with any soft armor, just that it will work with the soft armor submitted to NIJ.

CERTIFIED VS. NON-CERTIFIED PLATES

There are both advantages and disadvantages for manufacturers submitting their plates to NIJ for certification. While the advantages are many (e.g., demonstrating the quality of the product, availability of grant funding, etc.) there are also several disadvantages (e.g., cost of certification, timetable for certification, the rigidity of standards, complexity of the process, etc.). In the case of ICW plates, this is especially true. To be NIJ compliant, each combination of soft armor and hard armor plate must be certified separately. In other words, if you are a manufacturer with three different ICW plates and five different soft armor packages you would have to submit 15 soft armor/plate combinations at a cost of approximately $10,000 per certification.

This has resulted in many manufacturers choosing to sell "noncertified" ICW plates. These plates are still tested at an independent lab, but they are often tested to a modified standard without running the entire NIJ protocol or submitting to NIJ. Does this mean these plates cannot be trusted? Absolutely not. In fact, many of the largest and most legitimate companies in the industry do this to save money and time for ICW plates. These companies do so without compromising officer safety and in keeping with the highest possible standards. However, the opposite can also be true. Because NIJ is not reviewing this testing, questionable manufacturers are not held to any standard and can claim they are "tested" without necessarily meeting NIJ protocols.

ENSURING OFFICER SAFETY — SELECTION CRITERIA

The question then becomes, "How do I know that the plates I am getting are from a reputable source, are safe, and will work with my armor?" The short answer is: Do your research and understand your needs and the products you are considering. Always verify that the information you are given is from reputable manufacturers with a history in the industry. Additionally, there are several steps that you can take to ensure that your ICW plates create

a safe and effective system with your soft armor.

1. **Get educated.** Take the time to read the NIJ guidelines and do some basic research into what you are buying. This is a piece of gear on which your life depends, and the only way to truly arm yourself against uneducated or unethical manufacturers and unsafe products is to be an educated consumer. Before you purchase an armor system, do your homework on the manufacturer, the components, where they are manufactured and who is selling it to you. As an industry, we have become a bit too comfortable with trusting that the seller knows best. Only you can determine your needs and ensure that the products you buy will meet them.

2. **Check the NIJ website**. If you are purchasing an NIJ-compliant system, check with NIJ to ensure certification status. All products that are NIJ compliant are listed in a centralized online database called the Compliant Products List (CPL). If a product is not listed on the CPL, it is not NIJ compliant. This database can be found on the NIJ website at https://www.nij.gov/topics/technology/body-armor/Pages/compliant-ballistic-armor.aspx.

The database is searchable in multiple ways and the website also contains a wide variety of resources for educating officers about armor. Be sure to check both the plate and the underlying soft armor and make sure that they were shot together. Remember that even if they are both NIJ-compliant products, if there were not shot together as a system, they are not NIJ compliant as an ICW system.

3. **Require testing results from a reputable lab.** Always remember that ICW plates and soft armor are a system. It is critical that the two work together. Just because a plate works well with one armor package does not mean it will work with another. There is only one way to ensure that an ICW plate will work with your soft armor, and that is to have it shot by an independent lab using at least a modified NIJ protocol. Do not just accept the manufacturer shooting the plate for you or telling you they have shot it.

Field testing, while informative, is conducted under less than laboratory conditions, often with ammunition of unknown origin, and with plates and soft armor packages that are not verified prior to testing. Thus, it is easily skewed by dishonest vendors. Simply put, if the plate manufacturer cannot provide you with certified test results, from an NIJ-approved independent laboratory, for your specific armor combination, you should not buy their plate.

IT IS CRITICAL TO UNDERSTAND THAT JUST BECAUSE SOMEONE IS SELLING "LEVEL III ARMOR" DOESN'T MEAN THEY HAVE TESTED IT, OR THAT IT IS AN NIJ TYPE III.

WHY ARE THERE SO MANY LEVEL III'S?

One area of constant confusion about hard armor is the difference between Level III, III+ and III++ armor. The NIJ .06 standard only addresses Type III hard armor. Although the standard prescribes new and conditioned testing, drop testing and shooting performance testing, it only uses one specific ammunition: the M80 military ball 147grain 7.62x51mm. NIJ does not test the mild steel core 7.62x39 (AK-47) ammunition or 5.56mm (AR-15) ball ammunition as part of its criteria. Thus, an NIJ Type III plate does not necessarily stop either of these rounds.

To clarify this, most manufacturers now designate Level III plates that can stop these two rounds as "III+" plates. It is important to understand that this III+ designation is only a trade term; it is not part of the NIJ standard and as such may be used differently by different manufacturers. Worse still, the recent prevalence of the M855 Green Tip .223 round has created another level of confusion. Because it cannot be stopped by many current III+ plates, most manufacturers have begun designating the ceramic or steel plates that can stop the M855 as "III++" plates. Although the next NIJ standard will probably resolve this situation, it is critical to thoroughly investigate what you are buying before you purchase and make sure it stops the rounds you need to stop.

SIMPLY PUT, IF THE PLATE MANUFACTURER CANNOT PROVIDE YOU WITH CERTIFIED TEST RESULTS, FROM AN NIJ-APPROVED INDEPENDENT LABORATORY, FOR YOUR SPECIFIC ARMOR COMBINATION, YOU SHOULD NOT BUY THEIR PLATE.

4. **Buy from a single reputable manufacturer**. Since your ICW plate and soft armor are a system, you should ideally procure them from a single manufacturer who makes both parts. The larger, more reputable manufacturers selling ICW plates have tested them extensively with their own armor and can explain which plate and soft armor combination is best for your needs. Although there are a few manufacturers currently representing their ICW plates that work "with any soft armor," that is not true. If it has not been tested as a system with your soft armor, you are betting your life, or your teammate's life, that it might work. Further, from a warranty and liability standpoint, having a single point of responsibility is essential in case of a recall or product failure.

5. **Consider special threats**. Remember that even if you buy an NIJ-compliant system, the NIJ certification process only requires one specific round and this round is not necessarily representative of what you will face in the streets. Virtually all the reputable armor companies utilize special threat testing where they have independent labs test their systems against likely threats like the 7.62x39mm Mild Steel Core AK-47 round or the M855/SS109 military "Green Tip" round. It is essential that you take these special threats into consideration when purchasing armor. Simply put, if an M855 Green Tip round is a possible threat to your officers, you should only consider plates that have been independently tested against that round.

CONCLUSION

It is critical that agencies look carefully at the plates they are purchasing and how those plates interact with the soft armor they are wearing. Simply trusting that a plate is a certified plate or that the manufacturer says it works is not enough.

Just because an ICW plate is certified or tested with one piece of soft armor does not mean it will work with your armor. It is critical that you conduct your own research, require testing, investigate the manufacturer you are buying from and most importantly think about the rounds that you need to stop.

There are huge advantages to ICW plates in terms of weight, thickness and cost. They truly represent the next evolution of tactical body armor and can increase comfort without compromising safety. Without due diligence in the selection process, however, you may save weight, thickness or money at the expense of officer safety.

ENDNOTE

1. Ballistic Resistance of Body Armor NIJ Standard 0101.06 (July 2008) Sections 2.4 and 2.5.

ABOUT THE AUTHOR

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